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10/530,307	04/04/2005	Janardhana Bhat	SG 020026	9932

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EXAMINER	
LEE, SIU M	

ART UNIT	PAPER NUMBER
2611	

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10/25/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/530,307	BHAT ET AL.	
	Examiner	Art Unit	
	SIU M. LEE	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 August 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,6,10-14 and 17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-3,10-14 and 17* is/are allowed.

6)☒ Claim(s) *6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 February 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 8/23/2010 have been fully considered but they are not persuasive.

Applicant's argument:

Izumiyama only teaches controlling the gain on an amplifier which induces the use of either the forefront stage or a bypass circuit. Applicants can find nothing therein that teaches "measuring signal quality for determination of operation of an amplifier (on/off) comprises determining whether a DC voltage level of an automatic gain control signal has a first value indicating that the automatic gain control is inactive or has a value within a predetermined range indicating that the automatic gain control system is active.

Izumiyama teaches the use of one intermediate frequency amplifier and the Office Action indicates that this one amplifier is the same as two different amplifiers in Yamamoto. And it is not seen how the above teaches measuring a signal quality for determination of operation of an amplifier (on/off) comprises determining whether a DC voltage level of an automatic gain control signal has a first value indicating that the automatic gain control is inactive or has a value within a predetermined range indicating that the automatic gain control system is active, as claimed in claim 6. Where is the suggestion found in either of Yamamoto and Izumiyama? If the suggestion is not there,

why would someone of ordinary skill in the art decide to modify the combination of Yamamoto and Izumiyama.

Examiner's response:

With respect to the limitation "an automatic gain control signal has a first value indicating the automatic gain control system is **inactive** or has a value with in a predetermined range indicating that the automatic gain control system is **active**"; the examiner would like to point out that the instant application (page 1, line 4), "inactive" is defined as "off state"; and when the automatic gain control system is off, there should be no output from the automatic gain control system. Instead, according to the description of figure 4A, AGC2 is always active, when the antenna signal level is below 60 dB/μV, AGC2 is at a 5 volt level and when the antenna signal level is above 60 dB/μV, AGC2 will have a level below 5 volt in order to maintain the signal ST at a level of 105 dB/μV. Therefore, the AGC control system is always active as there is a control signal output form the AGC control system (AGC2) (paragraph 0036 of the instant application).

Base on the description of figure 4A in the instant application (page 7, lines 9-21), the examiner interprets "**determining whether a DC voltage level of AGC2 has a first value indicating that the automatic gain control system is inactive**" as setting the Vref for the comparator 204 (figure 4A) as the maximum AGC2 value and by comparing the AGC2 with the Vref, whether AGC2 is at its max is determined. With respect to "**determining whether a DC voltage level of AGC2 has a value within a**

predetermined range indicating the automatic gain control system is active"; the examiner interpret the range as AGC2 voltage having a value lower than the maximum AGC2 value.

With respect to Yamamoto, Yamamoto teaches measuring a signal quality (detector 18 detect the IF signal level) and output the signal quality to the microcomputer 22 for the decision on turning on or off of the high gain amplifier 31 (column 6, line 66 - column 7, line 14); and wherein the step of deciding to switch the amplifier to it on state is taken during at least one time interval when the receiver is switched to a channel (column 7, lines 48-52).

Yamamoto teaches using the detected signal level to control the on/off of the amplifier 31, also the detected signal level is use by AGC circuit as a basis for generating an AGC control signal (column 5, lines 42-47). Yamamoto teaches using the detected signal level for decision in bypassing the high gain RF amplifier 31 instead of using the AGC control signal and fails to disclose wherein measuring that at least one signal quality includes determining whether a DC voltage level of an automatic gain control signal has a first value indicating the automatic gain control system is inactive or has a value with in a predetermined range indicating that the automatic gain control system is active.

Izumiyama teaches a method for using the AGC voltage (AGC voltage from the AGC terminal 16 in figure 2) (AGC voltage terminal for controlling the amplifier circuit 14 and 15, column 6, lines 23-28) to compare with a reference voltage (Vr) wherein the reference voltage is set as an AGC voltage for an input signal level (column 8, line 66 –

column 9, line 2) and when the AGC voltage is lower than the reference voltage, amplifier 8 would be bypass and when the AGC voltage (as the receive is a mobile terminal, it is inherently the AGC voltage is a DC voltage) is higher than the reference voltage, amplifier would not be bypass; the reason for turning on the amplifier is to improve the carrier to noise (C/N) ratio, and turn off the amplifier for avoidance of intermodulation distortion (column 9, lines 45-53). (column 9, lines 3-25) (as it discloses an example that the reference voltage Vr has been set at the same voltage as AGC voltage developed at the AGC voltage terminal 16 when the input signal level is -90 dBm, it indicate that the AGC voltage is based on the input signal level, the circuit as shown in figure 2 is exactly the same as the invention of the instant application as disclose in figure 4A wherein AGC2 from controller 170 is input to comparator 204 to compare with a reference voltage (Vref) to generate output 202 for controller the bypass of the low noise amplifier (LNA 201)).

Yamamoto disclose using the claimed invention except using the detected signal level for determining whether to bypass an amplifier instead of using the AGC voltage to determine whether to bypass the amplifier. Izumiyama shows that using an AGC voltage to determine whether to bypass the amplifier is an equivalent method known in the art as the AGC voltage is generate based on the detected signal level (AGC voltage developed at the AGC terminal 16 when the input signal level is for example -90 dBm, column 9, lines 1-2). Therefore, because using the detected signal level and AGC voltage level were art recognized equivalents at the time the invention was made, one

of ordinary skill in the art would have found it obvious to substitute the method of Izumiyama for determination whether to bypass the amplifier.

Yamamoto and Izumiyama disclose the claim invention except for setting the reference voltage (Vref) for comparator 204 as the maximum AGC voltage. It would have been obvious to one having ordinary skill in the art at the time of invention was made to set the reference voltage (Vr) of Izumiyama as the maximum AGC voltage (lowest input signal level), since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. Iii Boesch, Eli F.2d 272, 205 USPQ 215.

As explained in above, all limitations are met by Yamamoto and Izumiyama, therefore the rejection of claim 6 is maintained.

Claim Objections

2. Claim 6 is objected to because of the following informalities:

Lines 9-10 recite “whether a DC voltage level of an automatic gain control signal (AGC2) has a first value indicating that the automatic gain control system is inactive”. As define by the instant application (page 1, line 4), “inactive” is defined as “off state”; therefore, when the automatic gain control system is off, there should be no output from the automatic gain control system. Instead, AGC2 is always active, when the antenna signal level is below 60 dB/μV, AGC2 is at a 5 volt level and when the antenna signal level is above 60 dB/μV, AGC2 will have a level below 5 volt in order to maintain the

signal ST at a level of 105 dB/μV. Therefore, the AGC control system is always active as there is a control signal output form the AGC control system (AGC2).

The examiner suggests changing the "the automatic gain control is inactive" to "the automatic gain control is at maximum AGC2 voltage".

Line 10 recites "the automatic gain control system"; there is a lack of antecedent basis for this limitation. The examiner suggests changing to "an automatic gain control system".

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto (US 6,831,705 B2) in view of Izumiyama (US 6,141,561) (the examiner interprets "inactive" is when the AGC level is at its maximum).

Yamamoto teaches measuring a signal quality (detector 18 detect the IF signal level) and output the signal quality to the microcomputer 22 for the decision on turning on or off of the high gain amplifier 31 (column 6, line 66 - column 7, line 14); and wherein the step of deciding to switch the amplifier to it on state is taken during at least one time interval when the receiver is switched to a channel (column 7, lines 48-52).

Yamamoto teaches using the detected signal level to control the on/off of the amplifier 31, also the detected signal level is use by AGC circuit as a basis for generating an AGC control signal (column 5, lines 42-47). Yamamoto teaches using the detected signal level for decision in bypassing the high gain RF amplifier 31 instead of using the AGC control signal and fails to disclose wherein measuring that at least one signal quality includes determining whether a DC voltage level of an automatic gain control signal has a first value indicating the automatic gain control system is inactive or has a value with in a predetermined range indicating that the automatic gain control system is active.

Izumiyama teaches a method for using the AGC voltage (AGC voltage from the AGC terminal 16 in figure 2) (AGC voltage terminal for controlling the amplifier circuit 14 and 15, column 6, lines 23-28) to compare with a reference voltage (Vr) wherein the reference voltage is set as an AGC voltage for an input signal level (column 8, line 66 – column 9, line 2) and when the AGC voltage is lower than the reference voltage, amplifier 8 would be bypass and when the AGC voltage (as the receive is a mobile terminal, it is inherently the AGC voltage is a DC voltage) is higher than the reference voltage, amplifier would not be bypass; the reason for turning on the amplifier is to improve the carrier to noise (C/N) ratio, and turn off the amplifier for avoidance of intermodulation distortion (column 9, lines 45-53). (column 9, lines 3-25) (as it discloses an example that the reference voltage Vr has been set at the same voltage as AGC voltage developed at the AGC voltage terminal 16 when the input signal level is -90 dBm, it indicate that the AGC voltage is based on the input signal level, the circuit as

shown in figure 2 is exactly the same as the invention of the instant application as disclose in figure 4A wherein AGC2 from controller 170 is input to comparator 204 to compare with a reference voltage (Vref) to generate output 202 for controller the bypass of the low noise amplifier (LNA 201)).

Yamamoto disclose using the claimed invention except using the detected signal level for determining whether to bypass an amplifier instead of using the AGC voltage to determine whether to bypass the amplifier. Izumiyama shows that using an AGC voltage to determine whether to bypass the amplifier is an equivalent method known in the art as the AGC voltage is generate based on the detected signal level (AGC voltage developed at the AGC terminal 16 when the input signal level is for example -90 dBm, column 9, lines 1-2). Therefore, because using the detected signal level and AGC voltage level were art recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute the method of Izumiyama for determination whether to bypass the amplifier.

Yamamoto and Izumiyama disclose the claim invention except for setting the reference voltage (Vref) for comparator 204 as the maximum AGC voltage. It would have been obvious to one having ordinary skill in the art at the time of invention was made to set the reference voltage (Vr) of Izumiyama as the maximum AGC voltage (lowest input signal level), since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. Iii Boesch, Eli F.2d 272, 205 USPQ 215.

Allowable Subject Matter

5. Claims 1-3, 10-14, and 17 are allowed.

6. The following is a statement of reasons for the indication of allowable subject matter:

The present invention describes a method and apparatus for automatically setting an operative state of a wideband amplifier in a multi-channel television receiver, the method comprising the steps of measuring at least one signal quality parameter; and deciding to switch the amplifier either to its ON state (active state) or to its OFF state (inactive state) on the basis of the measured parameter, wherein the step of deciding to switch the amplifier to its ON state (active state) is exclusively taken during at least one time interval when the receiver is switched to a channel, or during activation of the multi-channel television receiver, or during an installation process when all channels are scanned; wherein the step of deciding to switch the amplifier comprises the steps of:

a) switching the amplifier to its OFF state (inactive state);

b) measuring a value of S_{IP}(LNA=OFF) said at least one signal quality parameter while the amplifier is maintained in its OFF state;

e) switching the amplifier to its ON state (active state);

f) measuring a value of S_{IP}(LNA=ON) said at least one signal quality parameter while the amplifier is maintained in its ON state;

g) comparing the two measured values (S_{IP}(LNA=OFF); S_{IP}(LNA=ON));

h1) if the difference between the two measured values (S_{IP}(LNA=OFF); S_{IP}(LNA=ON)) indicates more intermodulation products in the case when the amplifier is in its OFF state as compared to the case when the amplifier is in its ON state, deciding to switch the amplifier to its ON state;

h2) if the difference between the two measured values (S_{IP}(LNA=OFF); S_{IP}(LNA=ON)) indicates more intermodulation products in the case when the amplifier is in its ON state as compared to the case when the amplifier is in its OFF state, deciding to switch the amplifier to its OFF state.

The closest prior art, Hutchison, IV et al. (US 5,722,061), Yamamoto (US 6,831,705 B2) and Kenny et al. (US 6,009,129) all disclose a system that disable or bypass am amplifier base on intermodulation distortion, however, none of the reference disclose using the difference between the two measured values (S_{IP}(LNA=OFF); S_{IP}(LNA=ON)) to determine if more intermodulation products in the case when the amplifier is in its OFF state as compared to the case when the amplifier is in its ON state, deciding to switch the amplifier to its ON state and vice versa. This distinct feature has been added to independent claims 1 and 17, thus rendering claims 1-3, 10-14, and 17 allowable.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SIU M. LEE whose telephone number is (571)270-1083. The examiner can normally be reached on Mon-Fri, 7:30-4:00 with every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Siu M Lee/
Examiner, Art Unit 2611
10/14/2010

/CHIEH M FAN/

Supervisory Patent Examiner, Art Unit 2611